

material would be only about four pounds, an amount, which, if compressed, the farmer might with ease have carried home in one of his coat-pockets!"—P. 39.

ELIÆ FRIES *Summa Vegetabilium Scandinaviæ*. Holmiæ et Lipsiæ.

A new work by Prof. Fries of Upsala—need we say more in its recommendation? It may however be as well to mention the character of its contents.

It has long been known that Fries was contemplating a Flora of Scandinavia, i. e., as he defines it, "inter mare occidentale et album, inter Eidoram et Nordkap." The present may be considered as the forerunner of such a work, since it contains a complete catalogue of Scandinavian plants accompanied by a tabular view of their distribution. This is followed by a synopsis of such species as are either not contained in the invaluable 'Synopsis Floræ Germanicæ' of Koch, or are considered by Fries to require further elucidation or correction. In short it may be considered, as observed by its author, to be an extension of the 'Synopsis Floræ Germanicæ,' which is bounded on the north by the Baltic Sea and the river Eyder, from that river, through Denmark, Sweden, Finland, Lapland and Norway, to the North Cape. It is therefore essential to all who make use (and what botanist does not?) of Koch's Synopsis.

PROCEEDINGS OF LEARNED SOCIETIES.

ENTOMOLOGICAL SOCIETY.

[Continued from vol. xviii. p. 473.]

September 1st, 1845.—The Rev. F. W. Hope, President, in the Chair.

"Further notes on the Honey-bee." By Mr. Golding and Dr. Bevan.

In this communication Mr. Golding again affirmed that the first swarm from a hive is led off by the queen-bee. He considered that it was chiefly owing to the striking peculiarity in the royal cells that the insects developed therein are so different from the ordinary individuals in the hive. He adopts the opinion of Hüber, that the great number of males in a hive is rendered necessary in order to ensure the fecundation of the virgin queen in her flight in the air, and that the law of primogeniture seems to be followed strictly in the emigration of young queens. From the fact that the long piping note of a young queen at liberty may be heard—but with short intervals of a minute or two—without intermission, from the time of her hatching until she comes off with the swarm, together with their having been seen to leave the hive in a day or two after being hived, he thinks it may be safely inferred that impregnation in the case of the young emigrant queen takes place after she becomes sovereign in her own right, and that she never leaves the hive until accompanying the swarm.

Dr. Bevan's communication was a reply to a note addressed to him by Mr. Westwood, and is as follows:—

“Machynlleth, August 25, 1845.

“My dear Sir,—I was well pleased to find from your favour of the 12th inst. that our opinions on the relative perfection of queen- and worker-bees were in unison; and also to learn, from your letter to Mr. Golding, that we agree as to the probable effect of the pabulum which is supplied, as well to the development of animal as of vegetable life. The instance which you refer to of the effect produced on flowers by the soil in which they bloom, and of course by the kind of nutriment which the plants derive therefrom, is very much in point. So likewise is its effect on fruit. It is well-known that in the cider counties the juice of the same fruit, treated in the same manner, will produce very different sorts of cider, according to the soil by which the trees are nourished. In Herefordshire to wit, the clay side of the county affords a sweet pleasant liquor, the sandy side a liquor that is rough and harsh, the fruit being the same. The mere dimensions of the royal cell without other concomitants would, I conceive, only cause the evolution of a large worker-bee, not a bee undergoing such wonderful changes as a queen presents, and capable of continuing its race. To accomplish this end, supported as we are by various analogies, it is surely reasonable to believe that much, if not the whole, depends upon diet. With yourself, I should much like to obtain the analogies of other swarming insects, such as humble-bees, wasps, ants, &c., in support or otherwise of this theory, but must transfer the research to the eyes of younger investigators and the resources of another Hüber.

“As I now, for the first time, learn what was stated in the British Association* at Cambridge, and am unacquainted with the particulars, which ought to be minutely ascertained before an opinion resting on such abundant evidence can be shaken, that matter must stand over for the present. I should like to know what evidence can be afforded that the queen which accompanied the swarm *was* a young one; also, whether it be clearly ascertained to have been a first swarm, and what queen, if any, was left behind. The hive might have contained a superannuated queen, which died during the maturation of her successor, though in that case I should conceive that the family would not have been populous enough to send forth a swarm. But she might have issued unknown to her proprietor, and have lost her life from some accident prior to being hived, in which case the swarm might return, and might in a short time afterwards re-issue with a young queen. Upon one or other of these suppositions only can I ever believe a prime swarm would be accompanied by a young queen.

“The disproportionate number of males usually found in a family of bees, in summer, has long been a stumbling-block with naturalists; but it is a difficulty which Hüber hoped he had been able to

* It was stated by one of the members of the British Association, at the meeting at Cambridge, that he had observed a first swarm led off by a newly-hatched queen.—J. O. W.

remove, by what however can only be regarded as an ingenious hypothesis, viz. that as the queen is evidently impregnated in the wide expanse of the atmosphere, this may render a numerous race of males desirable, that she may run no risk of experiencing disappointment in meeting with them. This aerial flight, having impregnation for its object, is countenanced by a similar proceeding among ants and humble-bees. In a correspondence which Feburier held with Mr. Knight, he mentioned a circumstance which fell under his own observation, tending to show that the union of the sexes in bees takes place after the manner of whales and human beings. If so, the horny prehensile appendages which appertain to the genital organs of wasps and hornets would not be needed. The evidence afforded by Mr. Golding of the act having been performed, taken *per se*, is certainly merely presumptive; but confirmed as it is by Hüber's declaration, that a portion of the drone's organ (*corps lenticulaire*) was repeatedly seen by Burnens in the vulva of the young queens, I think Mr. Golding's observation carries weight with it. I never knew nor heard of a princess having been impregnated prior to her quitting the parent hive. The experience of Hüber, Mr. Golding, myself and other apiarians shows that impregnation never takes place till after she has been established in her new abode. In all probability, if she quitted the old stock to take her aerial flight, the next in succession would be set at liberty during her absence, and when she returned, be prepared to receive her in hostile array, an event which the bees appear, on all occasions, sedulously to guard against.

"As regards the law of primogeniture in the royal brood, I think you will be satisfied that it is observed, when you consider the natural enmity which the royal insects bear towards each other; so great as to render it intolerable for more than one to be at liberty in the hive at the same time. The first-born pipes in a shrill tone, her voice being heard through no other medium than that of the air and the hive, while the next in succession, and sometimes even the next but one, sends forth a hoarse note, being heard through the additional medium of the royal cell. And the workers allow not one of the imprisoned princesses to emerge till the swarm issues forth, or till it is decided that there shall be no farther issue; in which latter case the royal cells are left unguarded, and the senior princess is allowed to despatch all the embryo princesses, which she very soon accomplishes, and thereby prevents the possibility of any competition for the throne.—E. BEVAN."

A discussion also took place on the potato-disease, the President attributing it chiefly to the attacks of the wire-worm, whilst Mr. Spence and others referred it to atmospheric causes.

October 6th.—The Rev. F. W. Hope, President, in the Chair.

The President exhibited a large collection of *Ichneumonidæ*, recently captured by himself at Southend. Also some plates of exotic *Lepidoptera*, drawn by Mr. Spry for the Transactions, containing

figures of new species of *Charaxes* from his own collection. Likewise a number of specimens of *Scolopendræ* of small size, which he had found in myriads infesting diseased potatoes at Southend, which he was thence induced to consider as the chief cause of the evil; an opinion which was however opposed by several of the members, Mr. Edward Doubleday detailing the results of microscopical observations made in this country and abroad, proving the growth of a minute parasitical fungus within the diseased part of the tubers.

Captain Parry exhibited two cases of insects from Caffraria, including *Manticora latipennis*, Waterh., and other new and rare *Coleoptera*.

Mr. W. W. Saunders exhibited a box of exotic insects, including a new and most brilliant species of *Morpho*, from South America, several species of *Thynnidæ* taken in copula, and several species of *Zeuzeræ* and other case-making *Lepidoptera* from New Holland.

Mr. Evans exhibited a specimen of *Sphinx Atropos*, taken on the rigging of a ship forty miles from land, off Cape Clear island, and one of *Porthesia auriflua*, taken 250 miles from land in the Bay of Biscay.

Mr. F. Smith exhibited specimens of *Nomada pucata*, one of which was gynandromorphous.

Mr. Edward Doubleday stated that the British Museum had recently acquired a collection of *Lepidoptera* from the north of Bengal, containing a new species of *Papilio* and many other new species, and that a collection from Honduras, formed by Mr. Dyson, had also been recently received by the Museum.

The following memoirs were read:—

The continuation of Mr. Saunders's Descriptions of New Holland *Cryptocephalidæ*.

Sp. 4. *Pleomorpha concolor*, W.W.S. Entirely dark blue green, except underside of 1st joint of antennæ, which is rufous; elytra shining punctate-striate, the lateral striæ more deeply. Length $\frac{1.2}{100}$ ths of an inch.—Inhabits Australia. In Mus. Parry.

Sp. 5. *Pleomorpha atra*, W.W.S. Entirely black, except underside of first two joints of the antennæ, which is rufous, and the club, which is pitchy brown; mandibles strongly projecting; elytra punctate-striate. Length $\frac{1.5}{100}$ ths of an inch.—Inhabits Western Australia. In Mus. Hope.

A letter from John Hogg, Esq., F.L.S., addressed to Mr. Westwood, on the alleged habits of *Crabro cephalotes*, dated Norton, July 19, 1845:—

“On my return home on the 28th of June, I observed a couple of the handsome *Crabro cephalotes* about my hot-house, and I found that they had nearly constructed a somewhat curious nest, or deposit for their eggs. It is composed of fine gravel or sand, strongly agglutinated together with clay, and contains four cylindrical cells, which are quite closed up at the top. I watched one of the insects sitting, most likely the female depositing her eggs, in the last cell,

which she afterwards finished; and which she has now deserted, as I have not seen her for many days.

“The nest is *firmly* fixed on the lime and gravel surface of the wall of the hot-house, and is itself nearly of an *equal hardness* with it. I do not doubt but each cell contains one or more eggs, and from which in due time young insects will come forth.

“The genus *Crabro* of Fabricius is a part of Linnæus’s genus *Sphex*; and I find that the latter author has given a short account of the mode adopted by the *Sphex sabulosa* (now called *Ammophila sabulosa*), of making its hole in the sand, and of depositing its eggs in the bodies of insects (see Syst. Nat., edit. 12, p. 941, vol. ii.); and he also describes (p. 942) how the *Sphex figulus* makes its nest in holes in wood, and ‘nidum *argillâ claudit.*’ The mode there described of that insect using *clay* is similar to that adopted by the *Crabro cephalotes*, but I did not notice it conveying a spider, or the larva of any other insect, into its nest; though perhaps, if the cells were examined, some such insect might be discovered within them.

“A few days ago I observed some sparrows on their nest in a tree in my garden pulling about something which appeared like a bundle of white feathers; a short time afterwards I went to water some flowers below the same tree, when to my surprise I found on the ground a beautiful nest of the *Vespa Britannica*. The sparrows having however dug holes with their bills in the lower portion of it, in search of larvæ, or of something to devour, had a good deal injured this most elegantly-made nest.”

In a subsequent communication Mr. Hogg states that he is quite certain the insect which formed the nest “is the *same* as that which I sent to you some few years ago, and which *you named* ‘*Crabro cephalotes*’; and the reason of my troubling you with my communication was, that I strongly suspected that its economy in *nidification* has never been fully ascertained. But as I before said, I have not at hand Shuckard’s ‘*Monograph of the Fossorial Hymenoptera,*’ or any other modern work which describes the species. That it may sometimes make its nest in the holes of rotten wood or in sand-banks, I do not know; but that it does *not always* do so, the present example clearly proves.

“One of the insects (probably the *male*) I only saw one day; it was *inside*, flying up and down the glass light of the hot-house. The other, or the *female*, was then as usual forming her nest. But I did not capture either of them, because I thought they would make more cells, and I should have frequent opportunities for doing so. Should either of them return, I will take care and secure it.

“I yesterday (22nd July 1845) opened one of the cells, when I found only a single *larva*, which is soft, yellowish-white, apodous, and resembling that of the *common wasp*. The entire cell was lined with a white membrane; but I did not notice, after the most minute examination, any fly, spider, or any remains whatever of any insect, and no egg. This was the *same* cell which I mentioned in my last letter as that in which I saw the *female Crabro* sitting, and then closing up its top.

“ I have thought it better to send you herewith pieces of the nest, from which you will see how it has been formed of clay and sand; and you will also observe a part of the membrane which lined the inside of the cell. The *larva* (also inclosed) was at first quite alive; but, owing to my having injured its head as I was opening the cell, it became yesterday evening nearly motionless. I observed, in using a strong lens, that here and there some pieces of sand do not fit quite close, and are unfilled up with clay; this will *allow a little air to reach* the inside of the cell.

“ The cells are of an elongate-ovate form, varying from $\frac{5}{8}$ ths to $\frac{7}{8}$ ths of an inch in length, the four being applied side to side and measuring $1\frac{3}{4}$ inch across their upper part, each cell being about $\frac{3}{8}$ ths of an inch across, and the diameter of the interior of the cell which I opened being about $\frac{1}{4}$ th of an inch. The exterior surface of the nest projects from the surface of the wall about $\frac{3}{8}$ ths of an inch. Each cell is quite separated from the adjoining one and has no internal communication with the other.

“ The tree in which I saw the sparrows on their nest, pulling about the nest of the *Vespa Britannica*, is a large pear-tree trained against the wall of my house: I examined the nest in which the sparrows were, but found no remains of the wasp's nest, only three gaping unfledged sparrows, and many feathers, some pieces of paper and cloth, to keep them warm and snug; and I likewise examined the tree around, in order to discover the *peduncle* of the wasp's nest, but I could see no traces of it. The wasp's nest had then been brought from some of the neighbouring trees or shrubs; this could easily be done, as it is extremely *light*, and measures only about 2 inches in its *larger* diameter, and about $1\frac{3}{8}$ inch in its *smaller* diameter.”

November 3rd.—The Rev. F. W. Hope, President, in the Chair.

It was announced that the second part of the fourth volume of the Transactions was ready for delivery to the members.

Mr. Tatham exhibited several splendid species of *Carabi*, one belonging to a new species recently received from China.

The President exhibited a box of insects received by him from Dr. Savage, collected at Cape Palmas, containing a new Goliath beetle. Also several boxes of insects recently forwarded from Landour in the East Indies by Mr. Benson, including several new species of *Coleoptera*.

A letter from Captain Boys, on the habits of various Indian species of insects, addressed to Mr. Westwood, was read, dated from Simla in the Himalayas, August 2nd, 1845:

“ It is a curious fact, of which I have undoubted proof from ocular demonstration, that both male and female insects of the genus *Copris* are mutually employed in forming the casing of earth after the deposition of the ova within the cowdung. When at Mhow, in search of scorpions on the bank of a rivulet, in turning up a large stone I exposed the perpendicular section of an excavation formed

by them, and which was about two feet from the upper level, immediately below a large dropping of cowdung. The stone was on the slope of the bank, the cavity containing four balls, two nearly finished and two about half-size. The male and female were hard at work, and after a little surprise at the light, continued the operation of adding earth to the smallest ball; this was performed by rolling it round and round, scraping up the mud which gathered, and by pattering it firmly with the fore and hind tibiæ. When I use the word pattering, I only mean to say the insects kept their legs in constant motion on the ball, as obtains in *Sisyphus* when rolling its pill; but in order that it should collect more earth, the male was frequently employed in digging beneath it. I could not detect the female in the act of depositing her ova. One side of every ball is very thin (comparatively), which leads me to believe that on this side the ova is placed. In forming the nucleus of cowdung, the female is the principal worker; she rolls it round and round, digging occasionally, so as to let it sink as the earth is thrown up above, and in this work the male also assists.—The small insect allied to *Aphodius* (*Chætopisthes fulvus*, Westw.) is one of our commonest, though not indigenous to these hills at *this* height: it abounds in horse- and cow-dung.—A small species of *Tridactylus* is also very common; during the rains, with a sheet and a lantern, myriads may be taken. Was it perfect or in the larva state? or rather I should ask if the wing-cases were black?—The larva of *Heterorrhina Roylii* to my knowledge may become a pupa, and *perfect from the pupa* in less than two months, however long it may have been in the larva state.—I arrived here on the 1st of June, and collected a great number of larvæ of all sizes, which I brought home, accompanied with the rotting debris of oak-dust in which I found them. Of these, six formed cocoons of the earth and oak-dust, and two were perfect the day before yesterday, and two more came out *yesterday, but were not H. Roylii*, though certainly I could in nowise distinguish a difference in any of the larvæ. One was a bronzed *Cetonia* (*Heterorrhina*?) with faint white lines on the elytra and thorax; the other a bronzed green with spots.—Does the Atlas moth feed on oak-trees in its larva state, or on the hill species of *Berberis*? At Almorah I took the cocoon from the latter, but never saw the larva; here I have taken the insect in the latter stage (at least I conjecture it will turn out to be the moth in question) on the oak, and the cocoon looks very like what I took at the former place. The larva of the one now alluded to is very like the one which forms the Tussa silk (I believe an *Actias* also), but the nidus is like whitey-brown paper and no thicker, in this respect resembling that formed by *Actias Luna*, but the caterpillar is not the same.—I heard a few days ago from a friend (W. Benson, Esq.), that a novel species of *Trictenotoma* had been captured in his neighbourhood (Mussoorie), as also either a variety of, or novelty allied to, *Geotr. longimanus*. The former he describes to me as more nearly allied to the *Prionides* than to the *Cerambyces*, though possessing connexion with the *Lucani* as far as the antennæ are concerned. The

thorax in his specimen is strongly *toothed* as in many species of *Prionus*.—From the body of an unfortunate goat, carried off by a leopard some days since, I have lately taken three species of *Necrophori*; one species large, *i. e.* $1\frac{1}{2}$ inch, and wholly black; the second black with red patches, $\frac{3}{4}$ inch; and the third I suspect is a shade removed from, or may be, a *Necrodes*. The male and female are both black, but the former is easily distinguished by the form of the posterior thighs, which are strongly incrassate. All these insects if not very strongly pressed when taken *smell of musk*, but their stench is intolerable if roughly handled. A largish species of red ant forms its nest among the leaves of mangoe trees. I have not yet met a description of it, though it cannot have escaped so long, being not only common, but the insect is a perfect nuisance to all pic-nic-ians, and must have drawn attention. The *queens* or females, when winged, are a very fine apple-green in the colour of body. I took them from the nest near Mhow at several times. The web which they elaborate from the *mouth* will bear writing on, and take ink as legibly as paper. I never saw any but red workers making the web. In this country the natives use them for the purpose of getting rid of wasps' nests (though I do think the remedy equally bad with the cure). The branch on which the colony has formed its leafy home is carefully cut through and transported to the vicinity of the wasps, and in a few days a total extirpation of the latter ensues. The ground is covered with the bodies of the *Vespæ*, and the ants go about biting every *human* being that they happen to crawl on. Is not the remedy as I stated? It is however only used when the wasps are in a chopper or thatched roof, and not easily to be got at for extirpation. I have never observed their nests but on the mangoe tree and *Ficus Indica*. I would wish to know if the common cabbage in England is ever infested with an apode (?) *Acarus*, or something allied thereto, and resembling a flask. *Here* I have taken them for the first time, and for some time doubted my own eyes, even with a microscope to help them. The creature is fully one-third of an inch long, but the snout or mouth is so minute as to require the aid above-mentioned*.—I have lately taken quantities of *Colliuris*; the larger one with black legs is a different species from those with red. Of this I doubted some time ago, but all my suspicions are now perfectly set at rest."

December 1st.—The Rev. F. W. Hope, President, in the Chair.

Mr. Bedell exhibited a specimen of *Anacamptis alacella* of Zeller and Fischer, a species new to Britain, which he had captured on Leatherhead Common on the 17th of August last.

Mr. Edward Doubleday exhibited a box of *Lepidoptera* from the highest range of the Rocky Mountains in North America, collected by Mr. Burke, the majority of which were strikingly analogous to European species, including a species of *Parnassius*, a genus hitherto found only in the Old World, although Dr. Boisduval had suggested

* [Probably a female *Coccus* of an undescribed species.]

the probability of its existence in the northern parts of America. Also a box of *Lepidoptera* from Borneo, collected by Mr. Hugh Lowe, jun.

The following memoirs were read :—

“ Descriptions of a new Longicorn Beetle (since published in the ‘Annals of Nat. Hist.’) and of a species of *Lucanidæ* (*Lucanus macrognathus*) from Borneo.” By Adam White, Esq.

“ Descriptions of two new Goliath Beetles from Cape Palmas, in the Collection of the Rev. F. W. Hope.” By J. O. Westwood.

SMICORHINA, Westw.

Corpus oblongum, depressum, supra velutinum, lateribus subparallelis, pedibus elongatis. Caput in mare laminis duabus parvis horizontalibus in vertice clypeoque in cornu breve recurvum producto. Prothorax lateribus pone medium ferè rectis, margineque postico ferè recto. Processus mesosterni brevissimus. Tibiæ anticæ maris extus tridenticulatæ, intus pone medium serratæ.

Smicorhina Sayii, Hope MS. *Nigra, pronoto sanguineo, vittis 4 nigris, intermediis duabus abbreviatis, capite supra cinereo-velutino, pedibus nigris, femoribus tibiisque sanguineo variis.* Long. corp. lin. 13.—Hab. in Africâ tropicali (D. Savage). In Mus. Hope.

MEGALORHINA, Westw.

Corpus oblongo-ovale, subdepressum, supra velutinum, elytris posticè angustioribus. Caput maris supra ferè planum, denticulis duobus ad marginem internum oculorum, clypeo in cornu valdè elongato apice bifido producto. Prothorax ferè semicircularis, convexus. Elytra subconveaa, velutina, colore pallido guttata. Tibiæ anticæ elongatæ, curvatæ, externè ferè ad apicem emarginatæ, internè serratæ. Processus mesosterni anticè porrectus.

Megalorhina Harrisii, Savage MS. *Supra opaco-velutina, capite supra albo, cornu subtùs castaneo; pronoto brunneo, luteo-marginato; scutello brunneo, elytris olivaceo-nigris maculis numerosis fulvescentibus in seriebus 5 (in singulo elytro) dispositis, pedibus castaneis, tibiis tarsisque 4 anticis nigris tarsis posticis flavescens.* Long. corp. (exclus. capitis cornu) lin. 18; latitudo elytrorum lin. 9.—Hab. cum præcedente (D. Savage). In Mus. D. Hope.

“ Descriptions of some new *Scutelleridæ* from Cape Palmas.” By J. O. Westwood.

After detailing the structural characters of *Plataspis Bucephalus*, White, descriptions are given of two new species of the same genus of large size, collected at Cape Palmas by Dr. Savage, and forwarded by him to Mr. Hope.

Plataspis (Aphanopneuma) biloba, Westw. *Supra obscurè lutea, nitida, depressa, lateribus subparallelis, undique nigro-guttulata, guttulis punctatis, spatio magno bilobo fulvescenti ad basin scu-*

telli, capite maris in lobos duos magnos conicos convergentes productis, spiraculis lateralibus in membrand tenui ferè inconspicuis. Long. corp. lin. 7.—Hab. Cape Palmas (D. Savage). In Mus. Hope.

Plataspis (Cantharodes) cœnosa, Westw. *Supra obscura sublutescens, opaca, nigro punctatissima, scutello fascia indistincta mediana subpallidiori, capite magno subconcauo, posticè in collum angustato, prothorace anticè valdè emarginato, lateribus rotundatis in medio parum angulatis, pedibus subgracilibus.* Long. corp. lin. 8.—Hab. cum præcedente.

“Note on two species of Moths taken at great distances from land.” By W. F. Evans, Esq.

The two insects in question were *Sphinx atropos* and *Porthesia auriflua*. They were caught on board Her Majesty's Ship ‘Rodney’ (one of the experimental squadron), which left Portsmouth on the 15th of July, and lost sight of land in two days; which they never saw, nor were certainly within 200 miles of, until beating up to Cork in September; and when at least forty miles off Cape Clear, wind due east (or off the land), the specimen of *Sphinx atropos* was captured on one of the topmasts.

The specimen of *Porthesia auriflua* was taken from off one of the boats which had been recently tarred, at about the extreme point of the cruise in the Bay of Biscay, and at least 200 miles from land. The sailors called the Sphinx an Irish paroquette. Great difficulty was experienced in killing it, but its death was after some time effected by means of creosote.

Extracts from a letter addressed by Dr. Savage to Mr. Hope on some of the insects of Cape Palmas, dated Cape Palmas, W. Africa, 7th March, 1845. Communicated by the Rev. F. W. Hope.

“**GOLIATHUS.**—*Ceratorhina frontalis* and *aurata* feed upon a small fig, the fruit of the *Ficus microcarpa*; also the *ciliolosa* and other species, of which we have several. One resembles in its habits the *F. Indica*; so much so, that it had obtained the common name of ‘Banyan-tree.’ *G. frontalis* feeds also upon the fruit of another tree, belonging to the Linnæan class Pentandria and order Monogynia; further examination of this tree, botanically, I have not had time to make. Upon these fig-trees we find also the *Cetonia guttata* of Oliv., *C. marginata*, the different species of black *Cetoniæ*, green, &c., feeding upon the juices of the ripe fruit.

“I have fully established the point that the *Goliathi* proper feed upon juices; and all the *Cetoniæ* (especially the *Goliathideous* species) that I have captured have been taken in the act of extracting juices from fruits and plants. The tree upon which the *G. Cacicus* is found I suppose to be a gigantic *Eupatorium*, from the juice of the bark of which that insect, and also *Cetonia guttata*, derive their nourishment.

“The *C. guttata* being found upon two different trees, feeding at one time upon the juice of the bark, at another upon that of the fruit, shows the manner in which its food is supplied the year round.

The figs yield several crops during the year, and the different species come to maturity at different times. The *Mecynorhina Savagii* of Harris feeds upon a gigantic climber, which upon being cut yields an astonishing quantity of pellucid water. So abundant is this fluid, and so negative in its qualities, that the natives, when a stream of water is not at hand, resort to it to quench their thirst. (See "A description of an African Beetle allied to *Scarabæus Polyphemus*, with remarks upon some other insects of the same group," published in the Journal of the Boston Natural History Society, 1843, by Thaddeus William Harris, M.D.) I have remarked that almost every individual *Cetonia* that I have sent to England I have found feeding upon the juices of plants; one (*Plasiiorhina mediana*, figured by Mr. Westwood) I captured in a rose-apple, through which it had made a hole; another, an *Heterorhina* (Westwood), I captured in the act of extracting the juice of the *Zea* maize, having made quite a hole at the foot of the young succulent leaves.

"I also send several pairs of *C. guttata*. One of the individuals of the series (a male) you will find with a different armature on the clypeus from all the others; the clypeus itself is extended, while the central horn remains the same. I have had several hundreds of *guttata* in my possession, but the individual in question is the only one of the kind. Is it simply a variety of *guttata*? It was captured with *guttata* proper, and brought to me by my collector with not less than fifty specimens of that insect. October and November are the months in which *frontalis*, *aurata* and *guttata* have been found most abundantly this year.

"**APIDÆ.**—I send eight specimens of the best honey-bee of this region; it is that from which the wax of commerce (as I suppose) is derived. The local name at this point (region of the Grebos) is 'Duh' (pronounced Dōh). The natives (I speak only of this tribe (Grebos), the native inhabitants of Cape Palmas) do not domesticate them. Occasionally a hive will be seen in a Gregree or Fetish house, attached or placed there, and looked upon as a sacred object. I have known only one instance, that of a noted doctor, when it was made a private Fetish. Their sting, it is said, is very severe and much dreaded by the natives. They make their nests generally in the cavities of old trees. I have succeeded in taking one swarm and domesticating them. When the natives desire their honey, they make a bundle of splintered bamboo, about six or ten feet in length, and, setting one end on fire, apply it to the entrance of the nest, which soon destroys them. The wax is not an article of commerce here, and is used to a very limited extent among the natives. The principal use by them is to make tight small boxes, &c., to protect their contents against the bad effect of water on the sea as they go off to vessels.

"There is a second species, the local name of which is 'Nuh' (pronounced Noo), about the same size as that of Duh. It is of a darker aspect, as also its wax, which is held in no estimation by the natives. This bee is said by some to be stingless; I am unable to decide this point.

"A third species exists, very small indeed, of a very light colour, approaching closely to white; local name 'Dafre' (pronounced Darfray). It attaches its nest to the surface of trees, and delights in lofty positions. The nest varies in size from a man's fist to three or four times that size, and is very light in aspect, nearly white. All admit that this bee is stingless. I regret that I have no specimens at hand. I mention these different species at the present time, simply because I have forwarded them in the box.

"A fourth species is found with the local name 'Vranh'; French sound, the *an* sounded like *an* in 'franc.' Many of the natives pronounce it as if written with *f*, Franh. This species burrows in the soft sticks of which the rafters in the natives' houses are made. They take a longitudinal direction, and extend from three to ten inches in length. They have the diameter of a bullet; sometimes two will be seen parallel. At the end will be found a shallow excavation, in which are deposited the eggs, and which are separated from the main cell by a perpendicular division, consisting of the fine particles of the wood made in process of excavation, united by some agglutinal, which no doubt they have the power of secreting. One of the specimens sent differs from the others. Is it not a male? It was found in the same nest with the others."

MICROSCOPICAL SOCIETY.

Oct. 14, 1846.—J. S. Bowerbank, Esq., F.R.S., President, in the Chair.

A paper by John Anthony, Esq., "On a Method of rendering the Appearances in delicate Structures visible by means of oblique transmitted light."

This method depends upon the placing the object in such a position that the fine lines or other delicate markings are exactly at right angles to the illuminating rays, when these lines, &c. will be at their maximum of distinctness, and thus tissues may be rendered distinctly visible whose existence when viewed in the ordinary manner might be considered as exceedingly doubtful. The object employed to illustrate this position was the Navicula of the Humber, one of the most delicate of test objects, which under ordinary circumstances appears perfectly transparent, but when viewed in this way, not only exhibits a double set of lines but also transverse lines, giving the whole the appearance of being covered with a delicate net-work. Four drawings of this object were exhibited, showing it in as many different positions, making a complete revolution of the field in which the markings just mentioned were distinctly visible. In order to bring out these appearances, it is necessary that the light should be very oblique, and must be passed laterally through the "bull's eye," in such a manner that the object (the Navicula) may appear of an intensely blue colour nearly opaque. The stage is then to be gradually turned round until the shell is in the position to be best seen as described.